What is claimed is:

1. A photovoltaic apparatus comprising:

(a) a plurality of photoelectric conversion elements, each being of an approximately spherical shape and including a first semiconductor layer and a second semiconductor layer which is located outside the first semiconductor layer, for generating photoelectromotive force between the first and second semiconductor layers, the second semiconductor layer having an opening through which a portion of the first semiconductor layer is exposed; and

(b) a support including a first conductor, a second conductor, and an insulator disposed between the first and second conductors for electrically insulating the first and second conductors from each other, the support having a plurality of recesses which are arranged adjacent to each other and of which inside surfaces are constituted by the first conductor or a coating formed thereon, the photoelectric conversion elements being disposed in the respective recesses so that the photoelectric conversion elements are illuminated with light reflected by part of the first conductor or coating formed thereon which constitutes the recess, the first conductor being electrically connected to the second semiconductor layers of the photoelectric conversion elements, and the second conductor being electrically connected to the exposed portions of the first semiconductor layers.

2. The photovoltaic apparatus of claim 1, wherein the photoelectric conversion elements have an outer diameter of 0.5 mm to 2.0 mm.

3. The photovoltaic apparatus of claim 1, wherein the opening of the second semiconductor layer has a central angle .theta.1 of 45.degree. to 90.degree..

4. The photovoltaic apparatus of claim 1, wherein the recesses of the support

have respective openings of a polygon of which ones adjacent to each other are continuous, each of the recesses narrows toward a bottom thereof, and the first semiconductor layer and second semiconductor layer of each of the photoelectric conversion elements are electrically connected to the second conductor and the first conductor, respectively, at the bottom or in a vicinity thereof of the recess.

5. The photovoltaic apparatus of claim 4, wherein the first conductor is provided with a circular first connection hole formed at the bottom or in a vicinity thereof of the recess and the insulator is provided with a circular second connection hole having a common axial line with the first connection hole, a portion of the photoelectric conversion element in a vicinity of the opening of the second semiconductor layer fits in the first connection hole and an outer surface portion above the opening of the second semiconductor layer is electrically connected to an end face of the first connection hole of the first conductor or to a portion thereof in the vicinity of the end face, and the exposed portion of the first semiconductor layer of the photoelectric conversion element is electrically connected to the second conductor through the second connection hole.

6. The photovoltaic apparatus of claim 5, wherein an outer diameter D1 of the photoelectric conversion elements, an inner diameter D2 of the openings of the second semiconductor layers, and an inner diameter D3 of the first connection holes, and an inner diameter D4 of the second connection holes satisfy a relationship D1>D3>D2>D4.

7. The photovoltaic apparatus of claim 1, wherein a light-gathering ratio x which equals to S1/S2 is selected to be in a range of 2 to 8, wherein S1 is an opening area of each of the recesses of the support and S2 is an area of a cross-section of the photoelectric conversion elements including a center thereof.

8. A photovoltaic apparatus comprising:

(a) a plurality of photoelectric conversion elements, each being of an approximately spherical shape and including a first semiconductor layer and a second semiconductor layer which is located outside the first semiconductor layer, for generating photoelectromotive force between the first and second semiconductor layers, the second semiconductor layer having an opening through which a portion of the first semiconductor layer is exposed; and

(b) a support including a first conductor, a second conductor, and an insulator disposed between the first and second conductors for electrically insulating the first and second conductors from each other, the support having a plurality of recesses which are arranged adjacent to each other and of which inside surfaces are constituted by the first conductor or a coating formed thereon, the photoelectric conversion elements being disposed in the respective recesses so that the photoelectric conversion elements are illuminated with light reflected by part of the first conductor or coating formed thereon which constitutes the recess, the first conductor being electrically connected to the second semiconductor layers of the photoelectric conversion elements, and the second conductor being electrically connected to the exposed portions of the first semiconductor layers, wherein each of the photoelectric conversion elements has an outer diameter of 0.5 mm to 2 mm, and a light-gathering ratio x which equals to S1/S2 is selected to be in a range of 2 to 8, wherein S1 is an opening area of each of the recesses of the support and S2 is an area of a cross-section of the photoelectric conversion elements including a center thereof.

9. A photovoltaic apparatus comprising:

(a) a plurality of photoelectric conversion elements, each being of an approximately spherical shape and including a first semiconductor layer and a second semiconductor layer which is located outside the first semiconductor

layer, for generating photoelectromotive force between the first and second semiconductor layers, the second semiconductor layer having an opening through which a portion of the first semiconductor layer is exposed; and

(b) a support including a first conductor, a second conductor, and an insulator disposed between the first and second conductors for electrically insulating the first and second conductors from each other, the support having a plurality of recesses which are arranged adjacent to each other and of which inside surfaces are constituted by the first conductor or a coating formed thereon, the photoelectric conversion elements being disposed in the respective recesses so that the photoelectric conversion elements are illuminated with light reflected by part of the first conductor or coating formed thereon which constitutes the recess, the first conductor being electrically connected to the second semiconductor layers of the photoelectric conversion elements, and the second conductor being electrically connected to the exposed portions of the first semiconductor layers, wherein each of the photoelectric conversion elements has an outer diameter of 0.8 mm to 1.2 mm, and a light-gathering ratio x which equals to S1/S2 is selected to be in a range of 4 to 6, wherein S1 is an opening area of each of the recesses of the support and S2 is an area of a cross-section of the photoelectric conversion elements including a center thereof.

10. The photovoltaic apparatus of claim 1, wherein the photoelectric conversion elements have a pn junction in such a manner that the second semiconductor layer of one conductivity type having a wider optical band gap than the first semiconductor layer having the other conductivity type does is formed outside the first semiconductor layer.

11. The photovoltaic apparatus of claim 1, wherein the photoelectric conversion elements have a pin junction in such a manner that the first semiconductor layer having one conductivity type, an amorphous intrinsic

semiconductor layer, and an amorphous second semiconductor layer of the other conductivity type having a wider optical band gap than the first semiconductor layer does are arranged outward in this order.

12. The photovoltaic apparatus of claim 10, wherein the first semiconductor layer and the second semiconductor layer are made of n-type silicon and p-type amorphous SiC, respectively.

13. The photovoltaic apparatus of claim 12, wherein the n-type silicon of which the first semiconductor layer is made is n-type single-crystal silicon or n-type microcrystalline (.mu.c) silicon.

14. The photovoltaic apparatus of claim 1, wherein the first semiconductor layer is a direct gap semiconductor layer.

15. The photovoltaic apparatus of claim 14, wherein the direct gap semiconductor layer is made of a semiconductor selected from the group consisting of InAs, GaSb, CuInSe.sub.2, Cu(InGa) Se.sub.2, CuInS, GaAs, InGaP, and CdTe.